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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/879,161	06/13/2001	Shuichi Takeuchi	P20762	3654

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EXAMINER

PHAM, HAI CHI

ART UNIT	PAPER NUMBER
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2861

DATE MAILED: 08/04/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/879,161

Applicant(s)

TAKEUCHI, SHUICHI

Examiner

Hai C Pham

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-6, 9 and 12-19 is/are rejected.
- 7) ☒ Claim(s) 7, 8, 10 and 11 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-4, 12-18 are rejected under 35 U.S.C. 102(b) as being anticipated by Iizuka (U.S. 5,587,825).

Iizuka discloses a scanning optical system comprising a light source unit that emits a laser beam including a first beam (writing light beam emitted from the gas laser 10) and a second beam (monitoring light beam emitted from the semiconductor laser 50), central axes of the first beam and the second beam substantially coinciding with each other (via the beam combiner 52), a modulating system (AO modulator 12) that modulates the beam emitted by said light source unit, a deflecting system (polygon mirror 20) that deflects the beam modulated by said modulating system, the deflected beam scanning within a predetermined angular range, and an imaging optical system (scanning f- θ lens 30) that converges the deflected beam to form a scanning beam

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spot on a surface to be scanned (40). Iizuka further teaches the writing light source (10) and that of the monitoring light source (50) having different wavelengths, with the monitoring light beam wavelength being selected within the visible light spectrum (600 nm – 700 nm) (Fig. 3) and the writing light beam within the spectral sensitivity range of the photoreceptor, laying around the 400 nm region of the light spectrum or non-visible region of the light spectrum (ultraviolet light having a wavelength between about 300 nm to about 400 nm).

With regard to claims 2-4, 12-18, Iizuka further discloses:

- the first beam (10) being used for forming an image on the surface to be scanned, the second beam (50) being used for alignment (synchronization purpose),
- the first beam (10) including light having one or more wavelengths within the non-visible wavelength range (around 400 nm), the second beam including light having at least one wavelength within the visible wavelength range (more than 600 nm),
- said light source unit including a first laser source (10) that emits the first beam, a second laser source (50) that emits the second beam, and a beam combining optical system (prism 52) that combines the first beam and second beam such that the central axes of the first beam and the second beam coincide with each other,

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- a beam separating optical system (dichroic mirror 60) that separates the first beam from the second beam so that only the first beam is incident on the surface to be scanned (Fig. 2),
- said beam separating optical system (60) being provided on a downstream side of said modulating optical system and on an upstream side of the surface to be scanned (Fig. 2),
- said beam separating optical system includes a dichroic mirror (dichroic mirror 60),
- said modulating optical system including a reduction optical system (converging lens 11) that reduces a diameter of a beam incident thereon, a modulator (AO modulator 12) that ON-OFF modulates an incident beam in accordance with an image pattern to be formed on the surface to be scanned, and a collimating lens (collimator lens 13) that collimates the beam modulated by said modulator,
- said modulator including an acousto-optical modulator (12),
- a chromatic aberration of said modulating optical system in respect to the first beam and the second beam is compensated for (by the use of the scanning f- θ lens 30).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and

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the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Iizuka in view of Noguchi (U.S. 4,806,753).

Iizuka discloses all the basic limitations of the claimed invention including a collimator lens (51) disposed on the optical path of the monitoring light beam, but fails to teach the writing light beam and the monitoring light beam being polarized.

However, Noguchi discloses a light scanning device comprising a first light beam (scanning light beam 2 emitted from the first semiconductor laser 1) for recording an image on the object surface (6) and a second light beam (synchronizing light beam 8 emitted from the second semiconductor laser 7) being used for alignment, wherein the two light beams have mutually perpendicular directions of polarization for the purpose of preventing interference.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify the device of Iizuka with the aforementioned teaching of Noguchi. The motivation for doing so would have been to prevent interference of the two light beams, which could deteriorate the quality of the reproduced image.

6. Claims 9 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Iizuka in view of Fujita et al. (U.S. 6,141,030).

Iizuka discloses all the basic limitations of the claimed invention except for the filter.

Fujita et al. discloses a laser exposure unit having a plurality of laser beam sources and including a filtering system (Figs. 11-12) for reducing the intensity of the light beams.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to include the filtering system as taught by Fujita et al. in the device of Iizuka. The motivation for doing so would have been to adjust the intensity of the laser beam.

Allowable Subject Matter

7. Claims 7-8, 10-11 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: the primary reason for the indication of the allowability of the claimed invention is the inclusion of the "excitation light source that emits the second beam, which serves as an excitation beam, having a visible wavelength, laser medium that is excited by the excitation beam to emit the first beam, and switching system that switches optical paths of the laser beam emitted by said excitation light source such that the laser beam emitted by said excitation light source is emitted from said light source unit or the laser beam emitted by said excitation light source is incident on said laser medium, the first beam being emitted by said laser medium in response to incident of the excitation beam on said laser medium" recited in claim 7 in the combination as they are currently

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claimed, the inclusion of "only the first beam is directed from said light source unit to said modulating optical system when imaging is performed, and wherein only the second beam is directed from said light source unit to said modulating optical system when alignment is performed" recited in claim 8 in the combination as it is currently claimed, and the "filtering system includes a filtering optical element formed with a first area that transmits only the non-visible light and a second area that transmits only the visible light, said filtering optical element being movable between a first position and a second position, said first area being inserted in an optical path between said light source unit and said modulating optical system when said filtering optical element is located at said first position, said second area being inserted in the optical path between said light source unit and said modulating optical system when said filtering optical element is located at said second position" recited in claim 10 in the combination as currently claimed, and "said first laser source and said second laser source are selectively actuated so that one of the First beam and the second beam is emitted at a time" recited in claim 11 in the combination currently claimed. the combined limitations are not found taught or fairly suggested by the prior arts made of record, considered alone or in combination.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hai C Pham whose telephone number is (703) 308-1281. The examiner can normally be reached on T-F (8:30-5:30).

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Benjamin R. Fuller can be reached on (703) 308-0079. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7722, (703) 308-7724, (703) 308-7382, (703) 305-3431, (703) 305-3432 for regular communications and for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.



HAI PHAM
PRIMARY EXAMINER

July 28, 2003